REMARKS/ARGUMENTS

The Specification was amended to clarify the fluorescent dyes PicoGreen®, TO-PRO 1, and TO-PRO 3. Claims 2-5 have been deleted and the subject matter thereof incorporated into amended claim 1. Claims 7, 16, 25, 28, 29, and 37 have been amended under Section 112, second paragraph, according to the Examiner's suggestions. Support for the amendment of Claim 7 is found in the specification at page 5, lines14-15. Claim 1 was amended to recite that the sample collection device is "automated." Support for this amendment can be found through out the specification and abstract. Claims 6-20 and 23-29 were amended to render the preamble consistent with the respective base claim. Claim 21 was amended to incorporate subject matter from claims 2-4 and 22. Claim 22 has been deleted. Claim 31 was amended to incorporate subject matter from claims 2, 3, 4, and 32. Claims 1, 6-21, and 23-37 remain in this application. Favorable reconsideration is requested.

Information Disclosure Statement. Item 1 of the Office Action suggested that the English abstracts of foreign patent documents submitted in the Information Disclosure Statement dated August 16, 2001 should be listed under "Other documents" instead of "Foreign Patent Documents." Applicants submit concurrently herewith a replacement Information Disclosure Statement with the English abstracts classified according to the Examiner's suggestion.

Claim Rejections – 35 USC § 112. Items 2-5 of the Office Action rejected claims 7, 16, 25, 28, 29, and 37 under Section 112, second paragraph, as being indefinite. These claims have been amended according to the Examiner's suggestion. Withdrawal of the rejection is respectfully requested.

Claim Rejections – 35 USC § 102. Claims 1-4, 20, 31, and 33 were rejected under Section 102(b) as being anticipated by Rajasekaran (U.S. Patent No. 5,384,022). Claims 1, 2, 4-6, and 20 were rejected under Section 102(b) as being anticipated by Allington (U.S. Patent No. 3,791,950). Claim 1 has been amended to incorporate the subject matter of claims 2-5. The Office Action acknowledged that claim 5 is not anticipated by Rajasekaran and that claim 3 is not anticipated by Allington. Therefore, Applicants respectfully submit that the rejected claims are not anticipated Rajasekaran or Allington.

Claim Rejections – 35 USC § 103. Claims 3 and 7 were rejected under Section 103(a) as being unpatentable over Allington in view of Lim et al. (U.S. Patent No. 5,284,559). Claims 8-

19, 21, 24, 26-30, and 34-37 were rejected under Section 103(a) as being unpatentable over Rajasekaran in view of Waterhouse et al. (U.S. Patent No. 6,005,663). Claim 25 was rejected under Section 103(a) as being unpatentable over Rajasekaran or Allington with Waterhouse in view of Ramsey et al. (U.S. Patent No. 6,056,859).

Rajasekaran. The Rajasekaran patent discloses a gel electrophoresis system in which a well 26 is cut into the gel layer. A cup 36 is disposed within the well 26 to collect a DNA sample. It plainly lacks several structures claimed in independent apparatus claims 1 and 21, including, but not limited to, a detector and "an energizable pump operably connected to the detector, the energizable pump configured to direct a low volume stream of liquid buffer solution onto a detected sample of interest, thereby collecting the sample of interest within the stream of buffer solution." Moreover, it appears the Rajasekaran device is not "automatic."

Lim. The Lim patent was cited for the purpose of teaching and suggesting the use of a buffer solution in a gel free zone or syringe pump. The Lim patent discloses a sample collection region filled with a buffer solution. However, Lim's sample collection region is distinctly outside and separate from the gel slab. One of ordinary skill would not reasonably consider Lim's sample collection region to be a "gel free zone within the slab gel" as claimed. Moreover, Lim fails to disclose or suggest a detection zone within the slab gel and a detector as presently claimed. In particular, Lim fails to disclose or suggest the detection zone and gel free zone being aligned with each other.

In view of the foregoing, Applicants submit that claims 3 and 7 would not have been obvious from the combined disclosure of Rajasekaran and Lim. Withdrawal of the rejection is respectfully requested.

Allington. The Allington patent discloses an electrophoresis system which includes a first section having a solid or semisolid medium (separating medium). The molecular species separated within the first section are transferred to second section containing "a liquid density gradient column" (collecting medium). The liquid density gradient column is designed to be moved by "bulk flow." Allington plainly teaches that "the separating medium forms one vertical column, hereinafter called a separating column, and the collecting medium forms another column, hereinafter called a collecting column, contiguous with the separating column, being either above or below the separating column ... with the two columns being electrically and

physically in series." Allington, column 5, lines 44-49, 53-54. Allington Figure 3 discloses an optical cell 90 as part of the collecting section 16. As mentioned above, the collecting section 16 contains a liquid density gradient medium. It is separate and distinct from the separating medium which contains a gel.

The Allington patent is relevant only in providing general background information relating to electrophoresis, but it fails to disclose or suggest most if not all of the claim limitations. For example, Allington discloses a cylindrical or tubular electrophoresis system. See, Allington, "Electrophoresis Apparatus" beginning at column 7, line 27. In contrast, the rejected claims plainly recite "a slab gel" electrophoresis system.[1] Referring to claim 1, Allington fails to disclose "a detection zone within the slab gel." Because the "detection zone" disclosed by Allington is outside the gel column, it is not "within" the slab gel as claimed. Similarly, Allington fails to disclose "a detector for detecting a sample of interest within the detection zone" since the claimed detection zone must be within the slab gel and no such detection zone is disclosed by Allington. Allington fails to disclose "a gel free zone within the slab gel." Nowhere does Allington disclose a gel free zone within its gel separating column. While Allington's collecting column is gel free, it is separate and distinct from the separating column, and therefore, it is not "within the slab gel." Moreover, Allington's collecting column is filled with a liquid density gradient and is not "filled with a buffer solution" as claimed. Allington fails to disclose a detection zone within the slab gel and gel free zone that "are aligned with each other."

Finally, Allington fails to disclose an energizable pump operably connected to the detector as claimed. Allington discloses a pump which pumps a "dense fluid 86." The purpose of Allington's dense fluid is to displace fluid at the lower portion of the density gradient column, forcing the entire column to flow upward and causing a portion of the density gradient fluid to

[1] The Office Action argued that the recited claim limitations relating to the slab gel, such as the "detection zone within the slab gel" were drawn to "intended use" and had no patentable weight. The Office Action even argued that the claimed "detection zone within the slab gel" actually covered any detection zone ***outside*** the slab gel. Such an interpretation is contrary to statutory patent law and written PTO procedure. It is well settled that obviousness under Section 103(a) requires examination of the claimed "subject matter as a whole." Moreover, "All words in a claim must be considered in judging the patentability of that claim against the prior art." *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970); cited in MPEP 2143.03.

exit the top through the fluid exit section 54. The Examiner argued that Allington's device is "capable" of injecting a buffer solution. However, no one skilled in the art would consider a buffer solution to be a "dense fluid" as described by Allington. Moreover, if a buffer solution were used in the Allington device (in place of the dense fluid), the Allington device would not operate as intended. Thus, the Allington syringe pump is not "configured to direct a low volume stream of liquid buffer solution onto a detected sample of interest, thereby collecting the sample of interest within the stream of buffer solution." The Allington device is not "capable" of directing buffer solution and still perform its required function of injecting a dense fluid into the density gradient column. Similar arguments to the foregoing may be made in connection with the other independent claims 21 and 31.

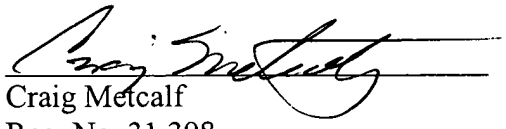
Waterhouse et al. The Waterhouse et al. patent discloses improved detection methods in a gel electrophoresis system. According to the Office Action, the Waterhouse patent discloses the use of fluorescent tags, a detection zone within the gel, lasers, optical fibers, optical filters, and low level light detectors. However, the Waterhouse patent fails to disclose or suggest all of the claimed features that are lacking in the primary references Rajasekaran and Allington discussed above. Therefore, the combination of Waterhouse with Rajasekaran or Allington is insufficient to support a rejection under Section 103(a) because all of the claim limitations are not taught by the combination. MPEP 2143.03.

Ramsey. The Office Action cited the Ramsey patent, in combination with Rajasekaran or Allington with Waterhouse, to support a rejection of claim 25. The Ramsey patent was cited for the purpose of disclosing the use of PicoGreen® as a conventional fluorescing dye. Applicants agree that PicoGreen® and the other fluorescing dyes disclosed in the Office Action are known. However, Ramsey fails to disclose or suggest all of the claimed features that are lacking in the primary references Rajasekaran and Allington as combined with Waterhouse, discussed above. Therefore, Applicants submit that the combination of Ramsey with Waterhouse with Rajasekaran or Allington is insufficient to support a rejection of claim 25 under Section 103(a) because all of the claim limitations are not taught by the combination. MPEP 2143.03.

In view of the foregoing, Applicants respectfully submit that claims 1, 6-21, and 23-37 would not have been obvious from the combined disclosures of the cited references. Withdrawal of the rejections under Section 103(a) is respectfully requested. If there are any remaining issues

preventing allowance of the pending claims that may be clarified by telephone, the Examiner is requested to call the undersigned.

Respectfully submitted,



Craig Metcalf
Reg. No. 31,398
Attorney for Applicants

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MADSON & METCALF
Gateway Tower West
15 West South Temple, Suite 900
Salt Lake City, Utah 84101
Telephone: 801/537-1700